

## ABSTRACT

### **ANTI-PARALLEL COUPLED FREE LAYER FOR A GMR SENSOR FOR A MAGNETIC HEAD**

A magnetic head including a GMR read head structure in which the outer end portions of  
5 the free magnetic layer are magnetically stabilized. The stabilization is achieved by the  
fabrication of thin film layers on top of the outer end portions that have an anti-parallel coupled  
magnetic field structure. A seed layer having a BCC crystal structure is deposited before a first  
magnetic field layer to increase coercivity of the anti-parallel coupled structure. The thickness of  
the layers is selected to produce a high coercivity structure having a net magnetization in the  
10 same direction as the magnetic field of the free magnetic layer. The anti-parallel coupled  
structure preferably includes a CoFeCr seed layer, a CoPtCr first magnetic layer, an Ru  
nonmagnetic layer and a CoPtCr second magnetic layer. An enhanced structure includes two  
CoFe layers formed below and above the Ru layer.